

REMARKS

Reconsideration of the above-identified application in view of the amendments above and the remarks following is respectfully requested.

Claims 1 - 102 are in this Application. Claims 2 – 35, 40 – 46, 50 – 75, 78, 79, and 83 – 102 have been withdrawn from consideration. Claims 1, 36 – 39, 47 – 49 76 – 77, and 80 - 82, have been rejected under 35 U.S.C. § 103. Claims 1 and 76 have been amended herewith.

Amendments To The Claims

35 U.S.C. § 103 Rejections

Claims 1 and 76 have been amended to teach that the waveform is modulated with the positional information. Likewise it is demodulated to obtain the positional information.

Kitada US 6,798,403 teaches an ultrasonic system for position detection.

Continuous Waveform and Citation to Bi.

Examiner acknowledges that Kitada fails to teach that the waveform is *continuous* and on this point relies on Bi US Patent No. 7,113,173 paragraph 63.

However Bi, being a published Patent, does not have numbered paragraphs. As an application based on an initial filing from 1995, there was no pre-grant publication.

Further applicant has carried out a word search on the detailed description part of the text of Bi. The term "continuous" appeared three times, and never in connection with the concept of a waveform. The term "waveform" did not appear at all.

Applicant therefore submits that Bi does *not* teach a continuous ultrasound waveform.

Modulation of Positional Information

Examiner acknowledges that Kitada fails to teach that the information is added to a continuous waveform by *modulation* but expresses the view in the response to

arguments that the claims are not so limited. Applicant has therefore limited the claims to specify:

said continuous waveform including a signal comprising positional information modulated thereon.

The modulation is further defined in terms of being reversible, namely:

such that said continuous ultrasonic waveform is decodable to extract said positional information, therewith to fix said attained position.

That is to say the modulation is defined as including an act of adding the positional information to the continuous ultrasonic waveform in such a way that the positional information can subsequently be removed by demodulation.

This contrasts with Kitada, who merely manipulates the ultrasonic waveform. There is no insertion of the positional information onto the waveform through these manipulations, and there is certainly not any possibility of extracting the positional information through a reversal of these manipulations.

General Comments

Overall, what the present applicant teaches is an ultrasound carrier wave which is continuous and onto which data (the position information) is modulated by reversible manipulations of the carrier wave. Such has been done for many years with radio signals but applicant is the first to use a carrier and modulation with an ultrasound signal, certainly the first to do such a thing for ultrasound based positioning. All existing ultrasound positioning systems use discontinuous pulses, which themselves are the positioning information. Kitada is a typical example of such a thing.

The advantages of using a continuous signal with modulation are inter alia first that greater accuracy is possible since the encoding can be more sophisticated. Secondly different devices can work in proximity since they can select different non-interfering carrier frequencies.

That is to say, irrespective of the question of whether Bi teaches continuous waveforms – according to the Examiner, or not according to the applicant's word search, Bi still fails to provide any motivation for combining Kitada with a continuous ultrasonic waveform. This is because the motivation is to vary the carrier waves in

order to avoid inter-device interference and Bi does not teach varying carrier waves as a way of avoiding inter-device interference.

In the existing art it is simply not possible to have two ultrasound positioning devices working in proximity. With a device according to the present claims it becomes possible for the first time.

Corresponding amendments have been made to claim 76, so that this too recites a continuous waveform which is modulated.

The remaining claims are believed to be allowable as being dependent on allowable main claims.

The independent claims are believed to be generic to all of the species.

In view of the above amendments and remarks it is respectfully submitted that the rejected claims are now in condition for allowance, and that the withdrawn claims relating to the non-elected species may be restored to the application. A prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,



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Enclosures:

☐ Request for Continued Examination (RCE)